FLYBY MATH™ QUICK START GUIDE

Introduction

This Guide outlines 6 steps to help you prepare to teach *FlyBy Math*™ and implement it with your students.

For more details, see the *FlyBy Math*™ Educator Guide, as well as the Teacher Guide for each Problem you choose to teach. All materials are free and available on the *FlyBy Math*™ website:

http://smartskies.arc.nasa.gov

Overview of the Student and Teacher Materials

Each Air Traffic Control Problem features a Student Workbook containing an air traffic control experiment, paper-and-pencil calculations to support the experiment, and a student analysis of the experiment and calculations. The Workbook can be supplemented with optional pre- and post-tests. *FlyBy Math*™ also includes video clips to introduce your students to the nation's air traffic control system.

Each Air Traffic Control Problem is accompanied by a Teacher Guide with a full set of answers and solutions, as well as suggestions for implementing the specific Problem.

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Select a Problem

Many teachers have found ATC Problem 2 to be an appropriate starting point for their students.

Decide which of the five Air Traffic Control Problems you wish to teach. If you and your students are new to *FlyBy Math*™, you may want to begin with one of the following:

- ATC Problem 1: Two planes on merging jet routes; planes have same speeds; planes are same distance from the merge.
- ATC Problem 2: Two planes on merging jet routes; planes have same speeds; planes are different distances from the merge.

See the table at the beginning of the *FlyBy Math*™ Educator Guide for a detailed summary of ATC Problems 1 through 5.

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Download & Print the Online Documents

Go to the *FlyBy Math*™ website:

http://smartskies.arc.nasa.gov

Click the button for the Problem you have selected. Then download and print the student and teacher documents.

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Choose a Math Method

Decide which mathematics calculation method you want your students to use.

To help you make this choice, read the description of each method in the Implementation section of the *FlyBy Math*™ Educator Guide.

If you have never used *FlyBy Math*™, you may find it helpful to preview each of the calculation worksheets in the Student Workbook for the ATC Problem you have selected.

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Assemble the Experiment Materials

For the Experiment, you will need the following:

- ☐ the Student Workbook Worksheet: Set Up and Do the Experiment
- ☐ sidewalk chalk or masking tape or cashier's tape or butcher paper
- ☐ measuring tape or ruler
- ☐ pencils and marking pens
- ☐ 1 stopwatch or 1 watch with a sweep second hand or a digital watch that indicates seconds
- ☐ role-playing signs identifying pilots, controllers, and NASA scientists (available on the *FlyBy Math*™ website)

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⑤
Duplicate the Student Workbook

For the Problem you have selected, duplicate the Student Workbook to provide each student with one copy.

Note: Be sure to first remove the pages for the calculation methods you have **not** selected.

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Implement the Instructional Activities with Your Students

As you read through this step, you may find it helpful to have a copy of a Student Workbook and teacher materials.

Note: Each of the instructional activities is described in greater detail in the FlyBy Math™ *Educator Guide.*

The following sequence of instructional activities is recommended for implementing each *FlyBy Math*™ Air Traffic Control Problem:

a. If your students are new to *FlyBy Math*™, begin with the following two brief videos. Each is available on the *FlyBy Math*™ website.
   -- Animation of 24 hours of flight in the US
   -- See an air traffic controller on the job

b. (Optional) Administer the Pretest.

c. Assign the Read the Problem activity from the Student Workbook.

d. Have your students Set Up and Do the Experiment using those worksheets in the Student Workbook.

e. Assign the Calculation activity you have selected to guide your students through the mathematics that supports the experiment.

f. Assign the Analyze Your Results activity from the Student Workbook to help your students compare their experimental results with their calculations.

g. Assign the Extension problem, available for Air Traffic Control Problems 3, 4, and 5 only.

h. (Optional) Administer the Post-test.

Now you're cleared for takeoff!   ✈